Jan. 24, 1956 F. BRANDHANDLER 2,731,723

ARTICULATORS USED IN THE PRODUCTION OF DENTURE PROSTHESIS

Filed Nov. 24, 1954

Fig. 1.

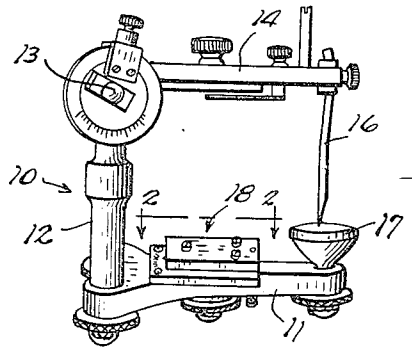


Fig. 2.

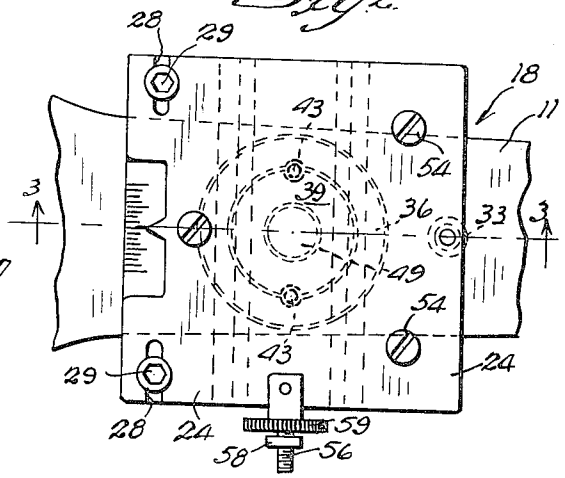


Fig. 4.

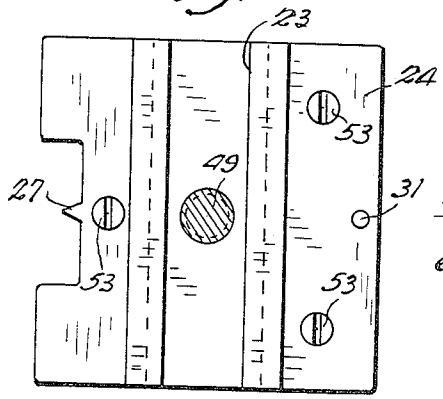


Fig. 3.

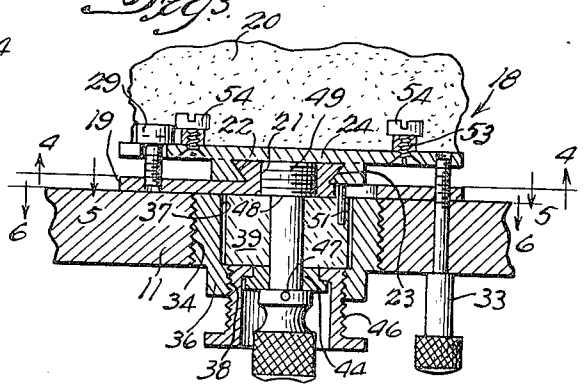


Fig. 6.

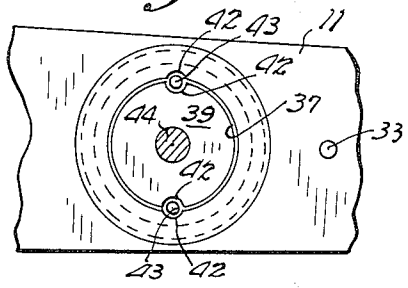


Fig. 5.

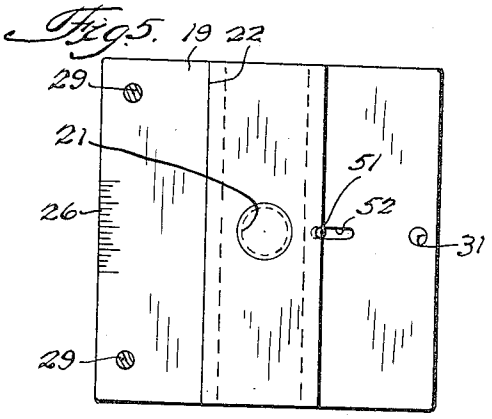
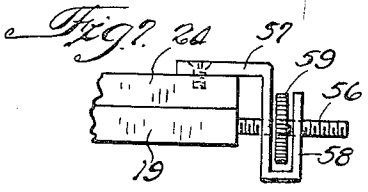


Fig. 7.



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ARTICULATORS USED IN THE PRODUCTION OF DENTURE PROSTHESIS

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6 Claims. (Cl. 32—32)

My invention relates to improvements in articulators used in the production of denture prostheses, reconstructions and in tooth analysis.

In the production of denture prostheses, reconstructions and in tooth analysis it is desirable to reproduce conditions of normal jaw movements as closely as possible. Heretofore articulators used in such work while achieving a fairly close approximation of normal mandibular movements and occlusion have failed to compensate for conditions which occur as when a bite impression is taken in wax. Such impressions are required in order to properly align the upper and lower denture models or casts when the same are mounted in the articulator. However the presence of the wax between the teeth when an impression is taken prevents the teeth from assuming a normal occlusal relationship. Similarly, the relationship of the jaws is different than when the teeth are in direct occlusal engagement. In order that an exact condition as obtains in a patient's mouth be reproduced it is required that an adjustment be effected in the positioning of the lower model or cast to compensate for the wax material.

Accordingly, it is an object of my invention to provide an articulator for use in the production of denture prostheses, reconstructions and in tooth analysis which is operable to establish centric positions and to reproduce conditions similar to lateral shifting of the human jaw so that occlusion under such conditions may be determined and the prostheses and reconstructions corrected to provide desired occlusal relationships.

Another object of my invention is the provision of an articulator of the foregoing character which is simple in construction and efficient and durable in service.

Other and further objects and advantages of my invention will become apparent when considered in connection with the accompanying drawing in which,

Fig. 1 is a perspective view of a conventional articulator embodying my invention.

Fig. 2 is a top plan view taken substantially on line 2—2 of Fig. 1 and showing on an enlarged scale the portion of the articulator embodying my invention.

Fig. 3 is a cross sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a cross sectional view taken on line 5—5 of Fig. 3.

Fig. 6 is a cross sectional view taken on line 6—6 of Fig. 3 and

Fig. 7 is a fragmentary elevational view of a detail of construction.

Referring to the drawings, the numeral 10 indicates generally a conventional articulator of the type used by dental technicians in the production of denture prostheses, reconstructions and tooth analysis. The said articulator includes a base 11 supporting a pair of condyle pillars 12 in the upper ends of which is supported a condyle shaft axis 13 carrying an arm 14. From the free end of the arm

14 depends an incisal pin 16 which cooperates with an incisal table 17.

The foregoing structure is conventional and forms no part of the present invention.

My invention is principally concerned with the provision of an adjustable mounting structure indicated generally by the numeral 18 on which is mounted the lower jaw model 20 of the denture prostheses. The said structure which is supported on the base 11 includes a lower plate 19 having a threaded central aperture 21 and a transversely extending dovetail key 22. The said key is received in a cooperating keyway 23 on the underside of an upper mounting plate 24. Thus, the lower plate 19 affords slidable support for the upper plate 24. Along one edge of the lower plate 19 there is provided a series of gauge lines 26. An indicator 27 on the upper plate 24 cooperates with said gauge lines to indicate the amount of relative movement between the upper and lower plates. The upper plate 24 is provided with a pair of opposed slots 28 through which pass screws 29 received in threaded holes in the lower plate 19. The said screws serve to clamp the upper and lower plates in a position of adjustment. Both plates are further provided with threaded apertures 31 in which is received a screw or pin 33 which also passes through an aperture in the base 11. When the said apertures are all in registration the upper plate 24 is in zero position with respect to the lower plate 19.

The base 11 is provided with a threaded bore 34 in which is received a bushing 36, the said bushing having a bore 37 in the upper portion thereof and being internally threaded in the lower portion 38. Received within the bore 37 of the bushing 36 is a plug 39. The bushing 36 and plug 39 are provided with diametrically opposed semi-circular vertical recesses or keyways 42 in which are received pins 43. The said pins cooperate with the keyways to prevent the plug 39 from rotating relative to bushing 37 while permitting vertical axial movement of the plug. Adjacent the lower end of the plug is a shouldered washer 44 which retains a shouldered bushing 46 exteriorly threaded and in engagement with the threaded portion 38. The plug 39, washer 44 and bushing 46 are confined between shoulders 47 and 48 of a knurled headed screw 49. As will be apparent the screw 49 engages the aperture 21 of the lower plate 19 and serves to secure the same to the base 11. A pin 51 projecting upwardly from the plug 39 is received in slot in the lower plate 19 and serves to align the lower plate with respect to base 11 as well as to prevent the said plate from rotating during manipulation of the screw 49. The bushing 46 may be rotated to effect axial movement thereof and thereby effect a vertical adjustment in the elevation of the lower plate 19 and its related structure.

The upper plate 24 is provided with a plurality of apertures through which are adapted to pass screws 53 which engage in sockets 54 embedded in the conventional plaster mounting 20 and thereby secure the mounting to the plate 19. The lower plate 19 has a screw stud 56 projecting outwardly from one edge thereof. Secured to the upper plate 24 is a bracket 57 which includes a U-shaped portion 58 the legs of which are pierced to receive the stud 56. A knurled disc 59 in threaded engagement with the stud 56 is disposed between the legs of the U-shaped portion. As will be apparent rotation of the disc in one direction or another will cause it to abut one of the legs and thereby cause the upper plate 24 to slide relative to the lower plate 19. Lateral shifting of the upper plate 24 may thus be effected.

In the use of my invention a cast or model of a set of upper teeth is arranged in hinge axis position and depends from arm 14 of the articulator according to well known practices. The bite impression is then placed on the lower cast or model and the same is articulated in

occlusion with the upper cast. The upper arm **14** of the articulator is then in parallel relation to the base **11** of the articulator and will remain in such position. When the wax impression is removed the lower cast or model is moved vertically by adjustment of bushing **46** to effect occlusion of the same with the upper cast or model. In my invention the adjustment means is moved independently of the articulator frame. In this way the upper cast is always in the same position for example, on the hinge axis. By moving the lower cast to effect occlusion with the upper I establish the same jaw and occlusal relationship that exists in a patient's mouth. Accordingly, any protrusive or lateral movements may be corrected with the casts or models disposed in their true relationship.

I claim:

1. In combination with an articulator having a base portion, a pair of plates, one of said plates being slidable relative to the other of said plates and constituting a mounting plate adapted to support a denture model, and screw operated means in said base portion for supporting the other of said plates for vertical adjustment.

2. In combination with an articulator having a base portion, a pair of plates, one superimposed over the other, said plates having cooperating means for guiding the upper of said plates in sliding movement relative to the lower of said plates, the upper of said plates constituting a support for a denture model, and vertically adjustable means in said base for supporting the lower of said plates.

3. In combination with an articulator having a base portion, a pair of plates, one superimposed over the other, said plates having cooperating means for guiding the upper of said plates in sliding movement relative to the lower of said plates, the upper of said plates constituting a support for a denture model, and vertically adjustable means in said base for supporting the lower of said plates, and means associated with said plates for effecting slidable adjustment of the upper of said plates relative to the lower of said plates.

4. In combination with an articulator having a base portion, said base portion having bore therein at least the lower portion of which is internally threaded, a bushing member in threaded engagement with said lower portion, a plug member in said bore and resting on said bushing, said plug member being vertically adjustable by rotation of said bushing, a lower plate supported on said plug member, screw means affording detachable securement of said lower plate to said plug member, an upper plate superimposed over said lower plate and arranged for sliding movement relative thereto, said upper plate constituting a support for a denture model.

5. In combination with an articulator having a base portion, said base portion having bore therein at least the lower portion of which is internally threaded, a bushing member in threaded engagement with said lower portion, a plug member in said bore and resting on said bushing, said plug member being vertically adjustable by rotation of said bushing, a lower plate supported on said plug member, screw means affording detachable securement of said lower plate to said plug member, an upper plate superimposed over said lower plate and arranged for sliding movement relative thereto, said upper plate constituting a support for a denture model, and means associated with said plates for effecting slidable adjustment of said upper plate relative to said lower plate.

6. In combination with an articulator having a base portion, said base portion having bore therein at least the lower portion of which is internally threaded, a bushing member in threaded engagement with said lower portion, a plug member in said bore and resting on said bushing, said plug member being vertically adjustable by rotation of said bushing, a lower plate supported on said plug member, screw means affording detachable securement of said lower plate to said plug member, an upper plate superimposed over said lower plate, said plates having cooperating guide means permitting relative sliding movement of said plates, said upper plate constituting a support for a denture model.

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